REMARKS

Claims 14, 16, and 18-28 are pending. By this Amendment, claims 14, 16, 18 and 24-27 are amended and claim 28 is added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Applicants appreciate the courtesies extended by Examiner Bareford to Applicants' representative during the interview conducted December 13, 2001. The points discussed during the interview are incorporated into the remarks below and constitute Applicants' record of the substance of the interview.

Claim 12 was rejected under 35 U.S.C. § 102(e) over Shiraishi et al. (U.S. Patent 5,939,130) and claims 14, 15 and 18 were rejected under 35 U.S.C. § 103(a) over Shiraishi et al.

Claim 12 has been cancelled without prejudice or disclaimer thus rendering moot its rejection.

During the interview, Examiner Bareford agreed that claims 14 and 24 were patentable over Shiraishi et al. but questioed whether the application, as filed, provided support for the recitation of the first and second layer. The undersigned has reviewed and amended claims 14 and 24 to clarify the claimed invention. It is respectfully submitted that claims 14 and 24, as amended, patentably distinguish over Shiraishi et al.

Claims 18, 21-23 and 25-28 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claims 14 and 24.

Reconsideration and withdrawal of the rejection of claims 14 and 18 under 35 U.S.C. § 103(a) over Shiraishi et al. are respectfully requested.

Claims 1-6, 10, 11 and 13-20 were rejected under 35 U.S.C. §103(a) over Kashiwagi et al. (U.S. Patent 5,938,891) in view of Lin (EP 0 595 749 A2) and Sasaki (Japanese Patent Publication 59-151424). The rejection is respectfully traversed.

Claims 1-6, 10, 11 and 13 have been cancelled without prejudice or disclaimer thus rendering moot their rejection.

During the interview Examiner Bareford stated that Kashiwagi et al. suggest in column 1, lines 5+ and column 8, lines 60+ the possibility of spinning the wafer prior to bonding. It is respectfully noted, however, that column 1, lines 5+ of Kashiwagi refers to a conventional disk bonding process that spreads the adhesive between the lower and upper disks at a high speed "for a predetermined time duration." There is no disclosure or suggestion by Kashiwagi et al. of controlling the spinning by taking the adhesive's viscosity into account, neither directly nor indirectly (by measuring the temperature of the substrate or of the viscous fluid). In addition, although Kashiwagi et al. suggest in column 8, lines 60+ that it is desirable to spread the adhesive layer to some extent beforehand, there is no disclosure or suggestion of controlling the spreading of the adhesive taking into account the adhesive's viscosity.

Lin and Sasaki each disclose controlling the speed of a motor to control the thickness of a resist or coating film applied to a substrate. It is respectfully submitted, however, that there is no motivation, absent Applicants', to combine either Lin or Sasaki with Kashiwagi et al. Kashiwagi et al. do not even spin the first disk DS1 after the adhesive is applied. Instead, Kashiwagi et al. wait until the second disc DS2 is joined to the first disk DS1 to spin the bonded disc DS3 created by the joining of the first disk DS1 and second disk DS2 to control the layer of liquid adhesive. One of ordinary skill in the art would not spin the first disk DS1 of Kashiwagi et al. after application of the liquid adhesive at the adhesive supplying section AS, N as that would increase the amount of time necessary to create the bonded disks DS3. Kashiwagi et al.'s stated goal is to more efficiently utilize the spin coating section. Adding the additional step of spinning the first disk DS1 to control the thickness of the liquid

adhesive layer, as suggested by the Office Action, would decrease, not increase, the efficiency of the disk bonding system of Kashiwagi et al.

Claims 16 and 18-28 recite additional features of the invention and are allowable at least for the reasons discussed above with respect to claim 14 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection of claims 14, 16 and 18-20 under 35 U.S.C. §103(a) over Kashiwagi et al. in Lin and Sasaki are respectfully requested.

Claims 7-9 and 12 were rejected under 35 U.S.C. §103(a) over Kashiwagi et al. in view of Lin and Sasaki and further in view of Yasuda et al. (Japanese Publication No. 7-29809.

Claims 7-9 and 12 have been cancelled without prejudice or disclaimer thus rendering moot their rejection.

The undersigned has reviewed the prior art of record and notes that none of the prior art of record discloses or suggests the claimed invention. Examiner Bareford's attention is directed to page 1 of the instant specification in which the relevance of German Offenlegungsschrift DE 38 22 835 A1 and Patentschrift DE 196 05 601 C1 is discussed.

In view of the above amendments and remarks, Applicants respectfully submit that all of the claims are allowable and that the entire application is in condition for allowance.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

PILLSBURY WINTHROP LLP

By: _____

John P. Darling
Reg. No.: 44,482
Tel. No.: (703) 905-2045
Fax No.: (703) 905-2500

JPD/hs

Attachment:
Appendix (pp. 8-10)

1600 Tysons Boulevard
McLean, VA 22102
(703) 905-2000

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES

IN THE CLAIMS:

Claims 14, 16, 18 and 24-27 are amended as follows:

14. (Twice Amended) A method of applying [at least one] a layer of a viscous fluid onto [at least one] a first planar substrate, comprising:

pumping the viscous fluid with a dosing pump to a dosing arm connected to the dosing pump and positioned over the [at least one] first substrate;

forming [a first] the layer on [a] the first substrate by dosing the first substrate with viscous fluid from the dosing arm;

rotating the first substrate with a rotary drive; and

controlling a thickness of the [first] layer formed on the first substrate to a predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm with respect to the first substrate, and a rotary speed of the rotary drive in response to at least one of a temperature of the first substrate, a temperature of the viscous fluid, and a viscosity of the viscous fluid.

16. (Twice Amended) The method according to claim 14, wherein the viscous fluid is a bonding material for bonding a second substrate to the first substrate, the method further comprising:

[connecting a] positioning the second substrate [to] onto the [first] layer of viscous fluid formed on the first substrate with a [connector] connecting means;

[forming a second layer of viscous material between the first and second substrates by] spinning off excess viscous fluid of the [first] layer between the first substrate and the second substrate with a rotary centrifugal drive[; and

controlling a thickness of the second layer by controlling at least one of a connecting pressure of the connector and a rotary speed of the rotary centrifugal drive in response to at least one of the temperature of the first substrate, the temperature of the viscous fluid, the viscosity of the viscous fluid, and a temperature of the second substrate].

18. (Twice Amended) The method according to claim 14, further comprising:

measuring the thickness of the [first layer]; and

automatically adjusting deviations between the measured thickness of the [first] layer and the predetermined thickness to within at least one tolerance.

24. (Amended) An apparatus for applying [at least one] a layer of a viscous fluid onto [at least one] a first planar substrate, comprising:

a pump that pumps the viscous fluid;

a dosing arm, connected to the pump and positioned over the [at least one] first substrate, that doses the [at least one] first substrate with the viscous fluid and forms the [first] layer on the [at least one] first substrate;

a plate that supports the [at least one] first substrate;

a rotary drive that rotates the plate;

a controller that controls a thickness of the [first] layer to a predetermined thickness by controlling at least one of the dosing pump, a position of the dosing arm, and a rotary speed of the rotary drive in response to at least one of a temperature of the first substrate, a temperature of the viscous fluid, and a viscosity of the viscous fluid.

25. (Amended) The apparatus according to claim 24, further comprising:

at least one sensor that measures the thickness of the [first] layer, wherein the controller controls at least one of the dosing pump, the position of the dosing arm, and the rotary speed of the rotary drive to automatically adjust deviations between the measured thickness of the [first] layer and the predetermined thickness to within at least one tolerance.

26. (Amended) The apparatus according to claim 24, wherein the viscous fluid is a bonding material for bonding a second substrate to the first substrate, the apparatus further comprising:

a [connector] connecting means that [connects a] positions the second substrate [to] onto the [first] layer of viscous fluid formed on the first substrate;

a rotary centrifugal drive that [forms a second layer of viscous material between the first and second substrate by spinning] spins off excess viscous fluid of the [first] layer between the first substrate and the second substrate.

27. (Amended) The apparatus according to claim 26, wherein the controller controls [a] the thickness of the [second] layer of viscous fluid by controlling at least one of a connecting pressure of the [connector] connecting means and a rotary speed of the rotary centrifugal drive.

Claim 28 is new.

End of Appendix.